

(19) (KR)
(12) (B1)

(51) Int. Cl.⁷
G03F 7/004

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(11)
(24)

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2003 07 04

(21) 10-1996-0030808
(22) 1996 07 27

(65)
(43)

10-1997-0007492
1997 02 21

(30) 2220/95 1995 07 28 (CH)
96107333.5 1996 05 09 EP(EP)

(73) -6301 50

(72) 17 8 25

(74)

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(54) 가

(I) 가 , 가

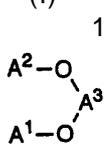
【화학식 1】



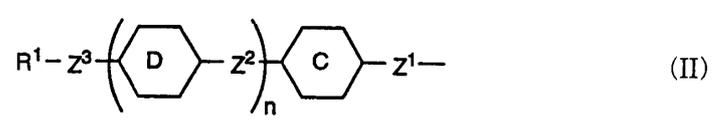
A¹ A² 가 (mesogenic)
A³ (R,R)- (S,S)- -1,2-

가 , 가
 가 (wave guide),
 (Non-Linear Optical, NLO) , (piezoelectric) 셀
 2 (frequency doubling SHC) 셀
 , /2 가 가
 가 , 25 100 , 25 80
 ((Grandjean)) ()
 /2 가 , , ,
 가 가 가 가
 가 (twisting capacity) 가 가

가 , 가 가 가
 가 가 가 가

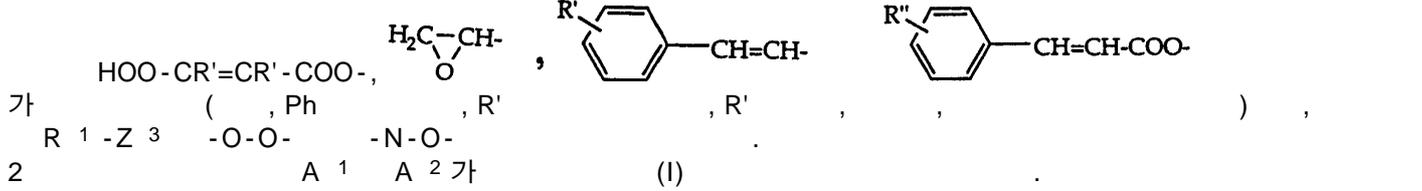
(I) :

 A¹ A² 가 (mesogenic)
 A³ (R,R)- (S,S)- -1,2-
 (I) 가

【화학식 2】 A¹ A² (II) :

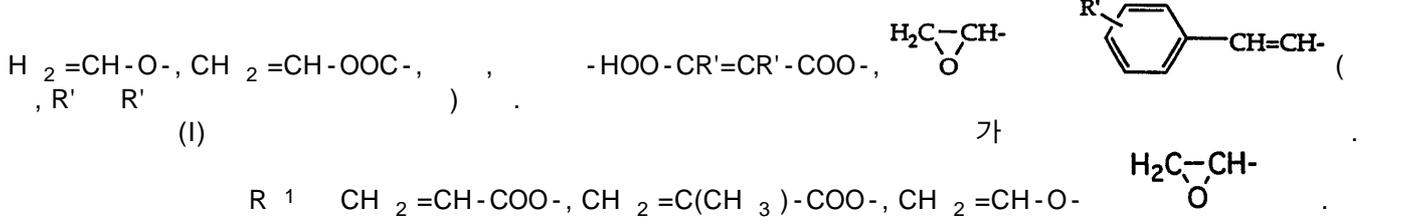


C D -2,5- , -2,5- , -1,4- , -1,3-
 -2,5- , / 1,4- ;
 Z¹ -(CH₂)_m -, -CO-, -(CH₂)_m CO- -(CH₂)_m OOC- ;
 Z² , -CH₂ CH₂ -, -CH₂ O-, -OCH₂ -, -COO-, -OOC-, -(CH₂)₄ -, -O(CH₂)₃ - -(CH₂)₃ O- ;
 Z³ -(CY₂)_m -, -O(CY₂)_m -, -(CY₂)_m O-, -(CY₂)_m COO-, -(CY₂)_m OOC-, -(Si[(CH₃)₂]O)_m -, -OCH₂ (Si[(CH₃)₂]O)_m -Si[(CH₃)₂]CH₂ O- -NHCH₂ (Si[(CH₃)₂]O)_m Si[(CH₃)₂]CH₂ NH-(, Y , m 1 16) ;
 n 0, 1 2 ;

R¹ CH₂=CH-, CH₂=CH-COO-, CH₂=C(CH₃)-COO-, CH₂=C(Cl)-COO-, CH₂=C(Ph)-COO-, CH₂=CH-COO-Ph-, CH₂=CH-CO-NH-, CH₂=C(CH₃)-CONH-, CH₂=C(Cl)-CONH-, CH₂=C(Ph)-CONH-, CH₂=C(COOR')-CH₂-COO-, CH₂=CH-O-, CH₂=CH-OOC-, Ph-CH=CH-, CH₃-C(=NR')-, ,



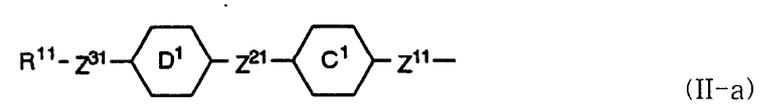
C D가 1,4- , -2,5- , -2,5-
 -1,4- ; Z¹ -CH₂ -, -CO- -OOC- ; Z² 가 , -CH₂ CH₂ -, -CH₂ O-, -OCH₂ -, -COO- -OOC- ; Z³ 가 -(CH₂)_m -, -(CH₂)_m O-, -(CH₂)_m COO-
 -(CH₂)_m OOC- (II) A¹ A² 가
 가 R¹ CH₂=CH-COO-, CH₂=C(CH₃)-COO-, CH₂=C(Cl)-COO-, CH₂=C(Ph)-COO-, CH₂=CH-COO-Ph-, CH₂=CH-CONH-, CH₂=C(CH₃)-CONH-, CH₂=C(Ph)-CONH-, C

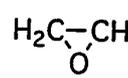


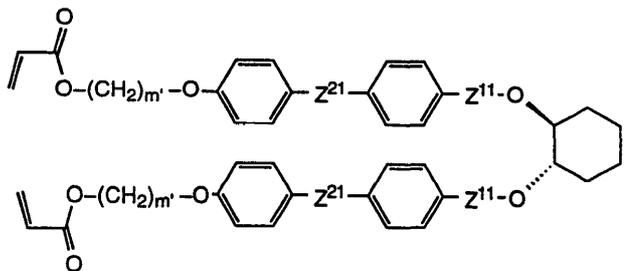
1,4- 1,4- , 1,4- , , ,
 -1,4- , 2,6- 3,5- 1,4- , 2- 3- -1,4- , 2,3- , 2,3-
 , 2,6- 3,5- -1,4- , 2- 3- -1,4- , 2- 3- -1,4- , 2,3- -1,4- , 2-
 3- -1,4- .

1 4 , , ,
 , i- , i- , t- , , ,
 A¹ A² 가 , -1,4- -1,3- -2,
 5- A¹ A² n 1 (II) , (II-a) :

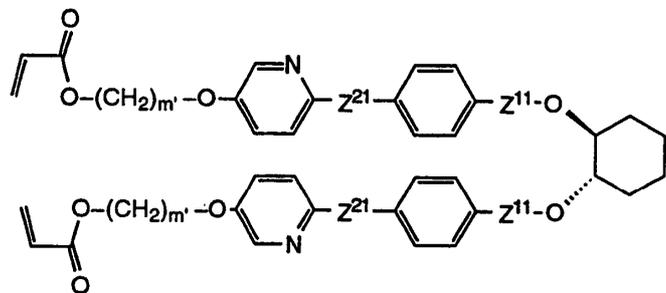
[화학식 3]



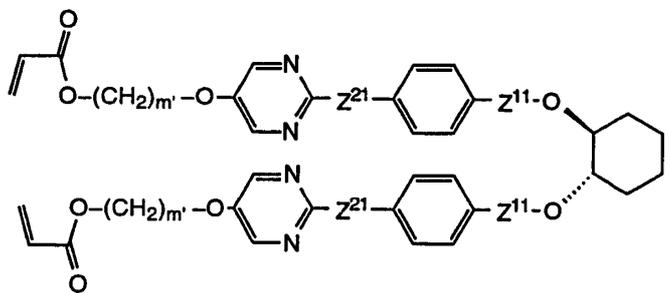
C¹ D¹ -2,5- , -2,5- , -1,4- ,
 1,4- ;
 Z¹¹ -CH₂ - -CO- ; Z²¹ , -CH₂ O-, -COO- -OOC- ;
 Z³¹ -(CH₂)_{m'} -, -(CH₂)_{m'} O-, -(CH₂)_{m'} COO- -(CH₂)_{m'} OOC-(, m' 3 12) ;
 R¹¹ CH₂=CH-COO-, CH₂=C(CH₃)-COO-, CH₂=CH-O-  .
 (I-A) (I-E) 가 :



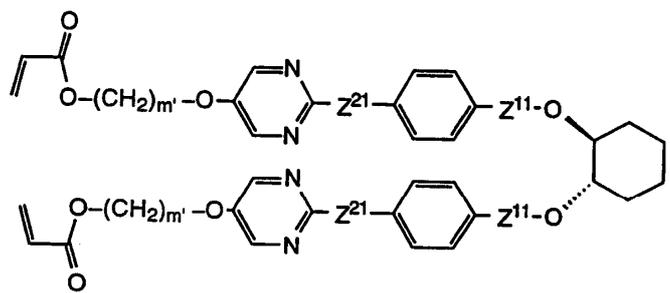
(I-A)



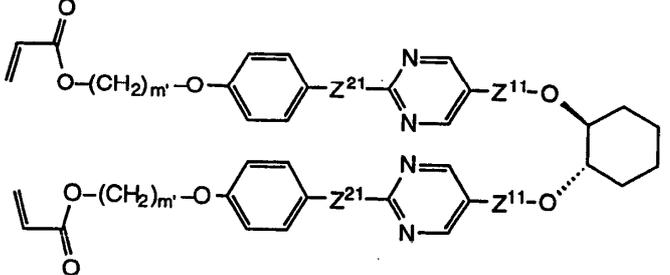
(I-B)



(I-C)



(I-D)



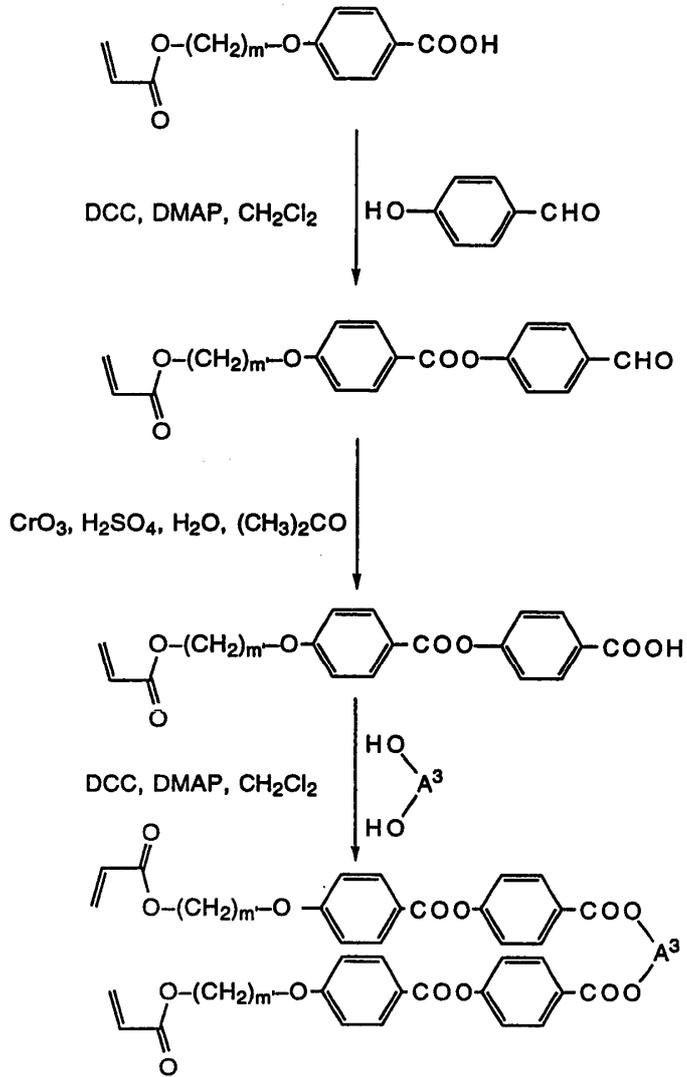
(I-E)

Z^{11} -CO- ; Z^{21} -COO- , -COO- ; m' 3 12
 A^1 A^2 가 (I) (- 1 5)-
 N,N' - 4-() (-)-
 N,N' - (Williamson) 3 -
 A^1 A^2 가 (I) (-)-
 (-)-

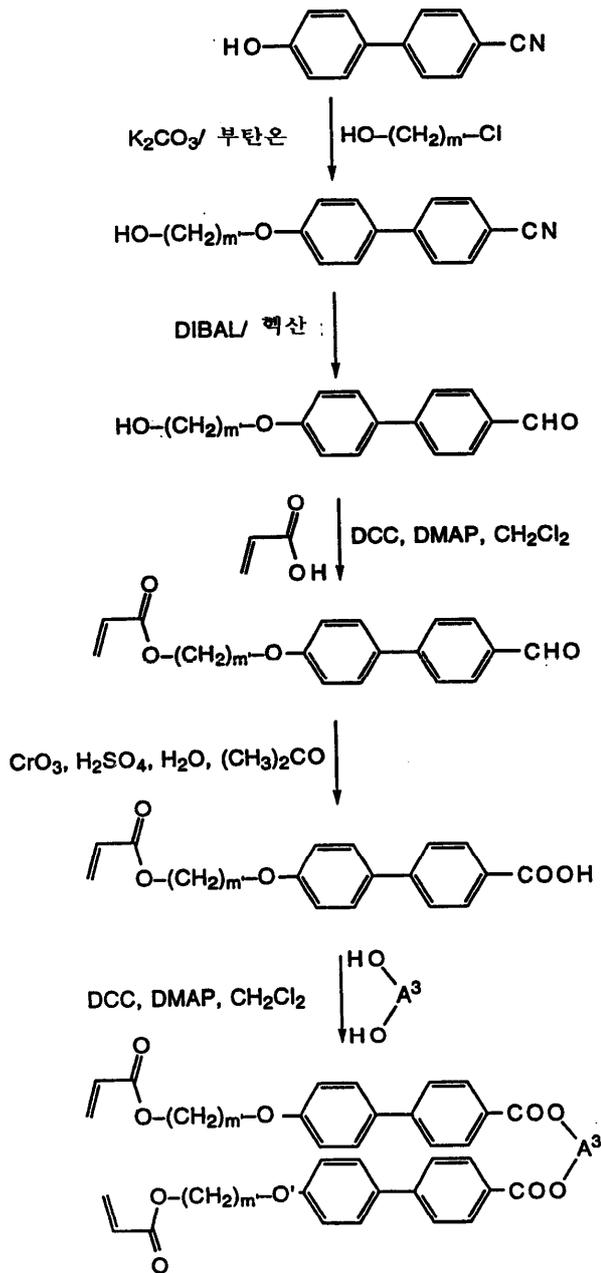
() 2-

1 5

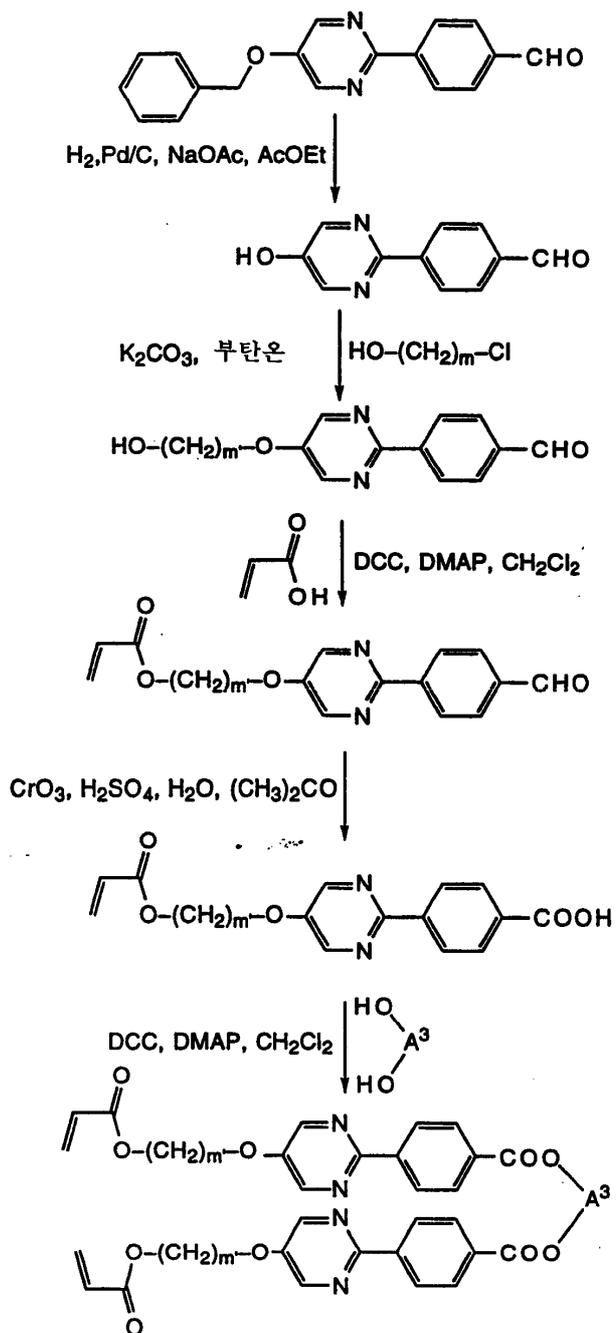
【반응식 1】



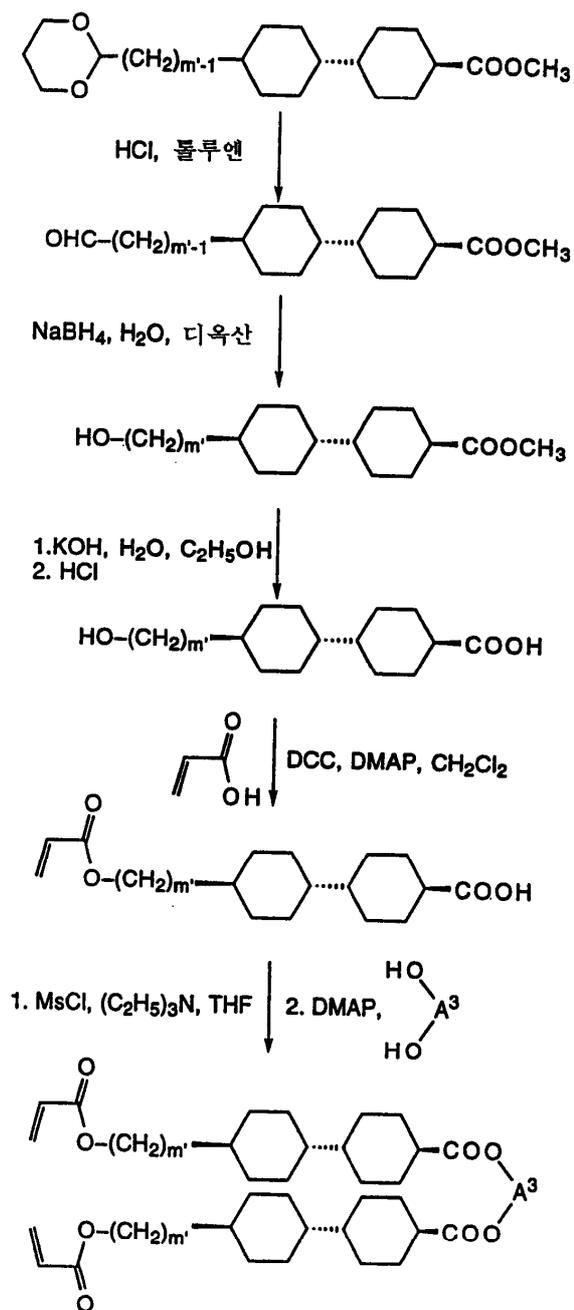
【반응식 2】



【반응식 3】



【반응식 4】



가 BHT(2,6- -3 - -4- - /'

) (I)

(I)

(I)

0.1 3

0 %

(I)

2

가 가

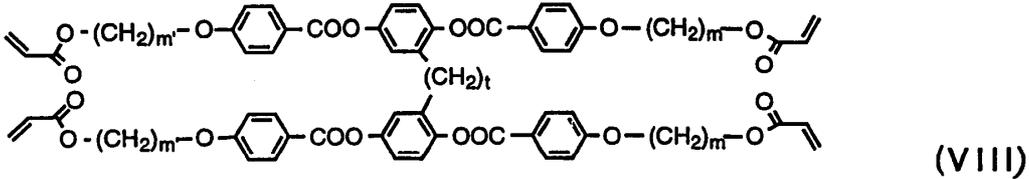
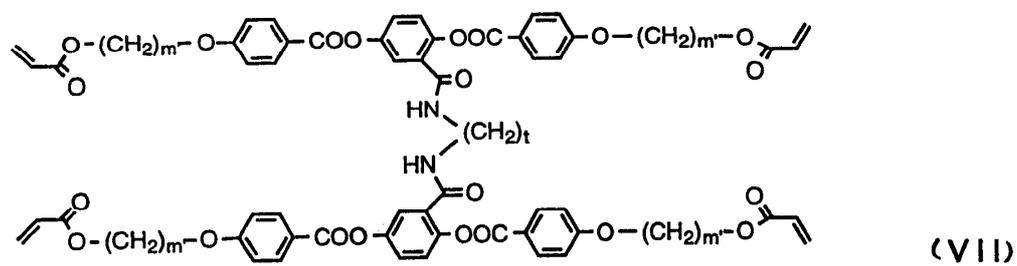
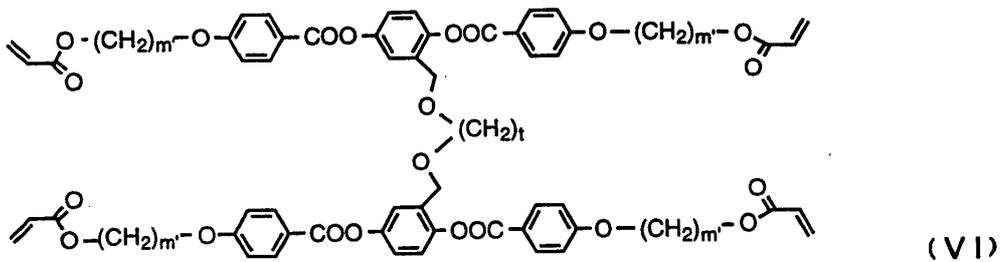
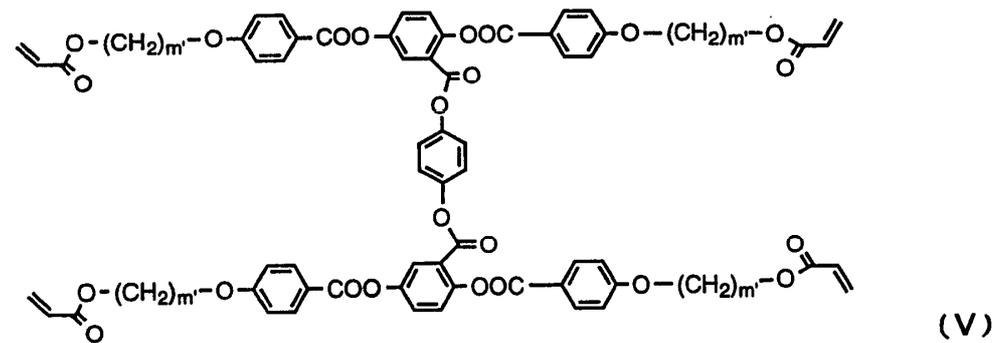
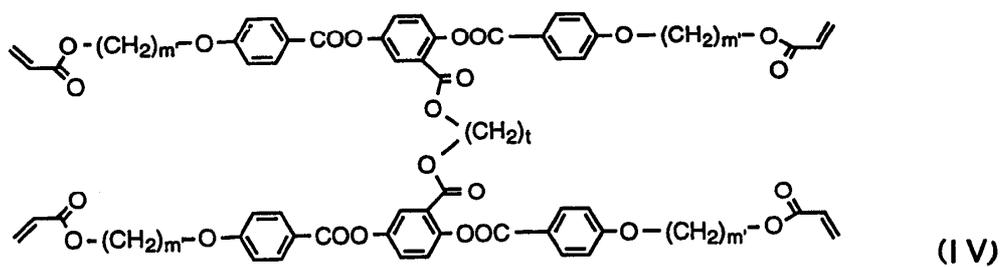
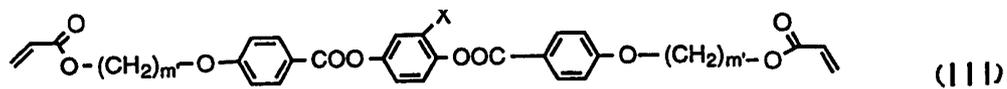
(I)

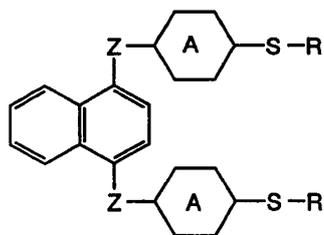
가

(I)

(III)

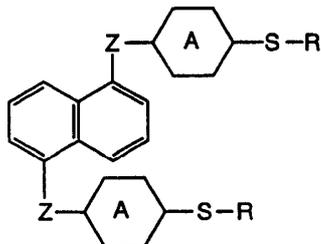
(X)





(IX)

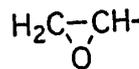
및



(X)

X , , , ;
 m' 4 12 ;
 t 2 12 ;
 Z -OCH₂- -OOC- ;
 A 1,4- 2- 3- -1,4- ;
 S -(CH₂)_{m'}-, -(CH₂)_{m'}O- -O(CH₂)_{m'}- ;

R CH₂=CH-COO-, CH₂=C(CH₃)-COO-, CH₂=CH-O-
 (I)
 . C , S , N , I

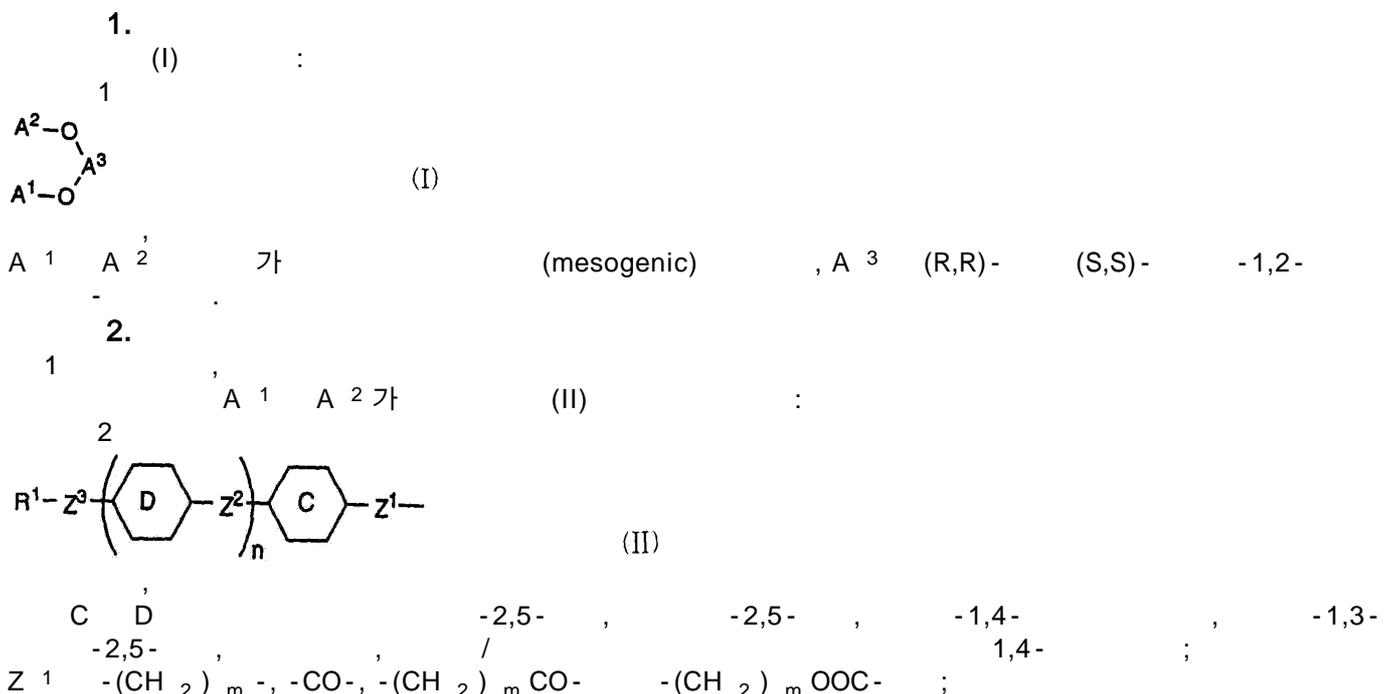


1
 20Mℓ) 0.1g (1R,2R)- -1,2- , 0.9g 4-(4-[8-
]-) 0.05g 4-(가)- 0.44g N,N'-
 5 / (8:2)
 0.1g (1R,2R)- -1,2- [4-(4-[8-
] ((C-I) 97).)]
 :
 (1R,2R)- -1,2- [4-(5-[4-] -2-)] ((C-I) 107);
 (1R,2R)- -1,2- [2-(4-[4-]) -5-)] ((C-I) 108);
 (1R,2R)- -1,2- [4-(4-[6-]) -] ((C-I) 54).
 :
 (1R,2R)- -1,2- [4-(4-[3-])] ;
 (1R,2R)- -1,2- [4-(4-[4-])] ;
 (1R,2R)- -1,2- [4-(4-[5-])] ;
 (1R,2R)- -1,2- [4-(4-[6-])] ;
 (1R,2R)- -1,2- [4-(4-[7-])] ;
 (1R,2R)- -1,2- [4-(4-[9-])] ;
 (1R,2R)- -1,2- [4-(4-[10-])] ;
 (1R,2R)- -1,2- [4-(4-[11-])] ;
 (1R,2R)- -1,2- [4-(4-[12-])] ;
 (1R,2R)- -1,2- (4-[3-] -4'-) ;
 (1R,2R)- -1,2- (4-[4-] -4'-) ;
 (1R,2R)- -1,2- (4-[5-] -4'-) ;

(1R,2R)- -1,2- (4-[6-] -4'-) ;
 (1R,2R)- -1,2- (4-[7-] -4'-) ;
 (1R,2R)- -1,2- (4-[8-] -4'-) ;
 (1R,2R)- -1,2- (4-[9-] -4'-) ;
 (1R,2R)- -1,2- (4-[10-] -4'-) ;
 (1R,2R)- -1,2- (4-[11-] -4'-) ;
 (1R,2R)- -1,2- (4-[12-] -4'-) ;
 (1R,2R)- -1,2- [4-(5-[3-] -2-)] ;
 (1R,2R)- -1,2- [4-(5-[5-] -2-)] ;
 (1R,2R)- -1,2- [4-(5-[6-] -2-)] ;
 (1R,2R)- -1,2- [4-(5-[7-] -2-)] ;
 (1R,2R)- -1,2- [4-(5-[8-] -2-)] ;
 (1R,2R)- -1,2- [4-(5-[9-] -2-)] ;
 (1R,2R)- -1,2- [4-(5-[10-] -2-)] ;
 (1R,2R)- -1,2- [4-(5-[11-] -2-)] ;
 (1R,2R)- -1,2- [4-(5-[12-] -2-)] ;
 (1R,2R)- -1,2- [4-(5-[3-] -2-)] ;
 (1R,2R)- -1,2- [4-(5-[4-] -2-)] ;
 (1R,2R)- -1,2- [4-(5-[5-] -2-)] ;
 (1R,2R)- -1,2- [4-(5-[6-] -2-)] ;
 (1R,2R)- -1,2- [4-(5-[7-] -2-)] ;
 (1R,2R)- -1,2- [4-(5-[8-] -2-)] ;
 (1R,2R)- -1,2- [4-(5-[9-] -2-)] ;
 (1R,2R)- -1,2- [4-(5-[10-] -2-)] ;
 (1R,2R)- -1,2- [4-(5-[11-] -2-)] ;
 (1R,2R)- -1,2- [4-(5-[12-] -2-)] ;
 (1R,2R)- -1,2- [2-(4-[8-]) -5-] ;
 (1R,2R)- -1,2- [2-(4-[8-]) -5-] ;
 (1R,2R)- -1,2- [-4-(-4-[3-])] ;
 (1R,2R)- -1,2- [-4-(2-[-4-(3-]))] ;
 (1R,2R)- -1,2- [4-(-4-[3-])] ;
 (1R,2R)- -1,2- [4-(2-[-4-(3-]))] ;
 0.2g (1R,2R)- -1,2- , 0.5g , 50Ml 7
 , 1.1g 4-(5-[8-] -2-) ,
 , 100Ml , 50Ml 3
 100Ml 2 / (8:2) , 2 1.1g (1R,
 2R)- -1,2- [4-(5-[8-] -2-)] ;
 (1R,2R)- -1,2- [4-(4-[3-])] ;
 (1R,2R)- -1,2- [4-(4-[4-])] ;
 (1R,2R)- -1,2- [4-(4-[5-])] ;
 (1R,2R)- -1,2- [4-(4-[6-])] ;
 (1R,2R)- -1,2- [4-(4-[7-])] ;
 (1R,2R)- -1,2- [4-(4-[9-])] ;
 (1R,2R)- -1,2- [4-(4-[10-])] ;
 (1R,2R)- -1,2- [4-(4-[11-])] ;
 (1R,2R)- -1,2- [4-(4-[12-])] ;
 (1R,2R)- -1,2- (4-[3-] -4'-) ;
 (1R,2R)- -1,2- (4-[4-] -4'-) ;
 (1R,2R)- -1,2- (4-[5-] -4'-) ;
 (1R,2R)- -1,2- (4-[6-] -4'-) ;
 (1R,2R)- -1,2- (4-[7-] -4'-) ;

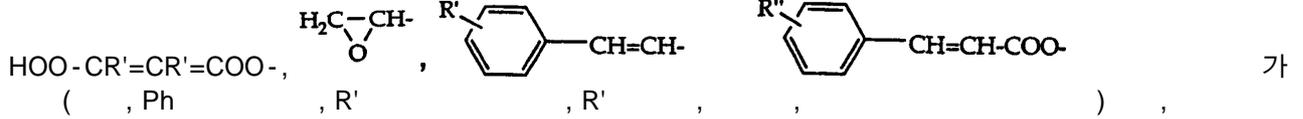
(1R,2R)- -1,2- (4-[9-] -4'-) ;
 (1R,2R)- -1,2- (4-[10-] -4'-) ;
 (1R,2R)- -1,2- (4-[11-] -4'-) ;
 (1R,2R)- -1,2- (4-[12-] -4'-) ;
 (1R,2R)- -1,2- [4-(5-[3-] -2-)] ;
 (1R,2R)- -1,2- [4-(5-[4-] -2-)] ;
 (1R,2R)- -1,2- [4-(5-[5-] -2-)] ;
 (1R,2R)- -1,2- [4-(5-[6-] -2-)] ;
 (1R,2R)- -1,2- [4-(5-[7-] -2-)] ;
 (1R,2R)- -1,2- [4-(5-[8-] -2-)] ;
 (1R,2R)- -1,2- [4-(5-[9-] -2-)] ;
 (1R,2R)- -1,2- [4-(5-[10-] -2-)] ;
 (1R,2R)- -1,2- [4-(5-[11-] -2-)] ;
 (1R,2R)- -1,2- [4-(5-[12-] -2-)] ;
 (1R,2R)- -1,2- [4-(5-[3-] -2-)] ;
 (1R,2R)- -1,2- [4-(5-[4-] -2-)] ;
 (1R,2R)- -1,2- [4-(5-[5-] -2-)] ;
 (1R,2R)- -1,2- [4-(5-[6-] -2-)] ;
 (1R,2R)- -1,2- [4-(5-[7-] -2-)] ;
 (1R,2R)- -1,2- [4-(5-[8-] -2-)] ;
 (1R,2R)- -1,2- [4-(5-[9-] -2-)] ;
 (1R,2R)- -1,2- [4-(5-[10-] -2-)] ;
 (1R,2R)- -1,2- [4-(5-[11-] -2-)] ;
 (1R,2R)- -1,2- [4-(5-[12-] -2-)] ;
 (1R,2R)- -1,2- [(2-[4-[8-] -2-)] -4-[3-])] ;
 (1R,2R)- -1,2- [(-4-(-4-[3-]))] ;
 (1R,2R)- -1,2- [(-4-[2-(-4-[3-])])] ;
 (1R,2R)- -1,2- [4-(-4-[3-])] ;
 (1R,2R)- -1,2- [4-(2-[-4-(3-)])] .

(57)



Z² , -CH₂CH₂-, -CH₂O-, -OCH₂-, -COO-, -OOC-, -(CH₂)₄-, -O(CH₂)₃- (CH₂)₃O- ;
 Z³ -(CY₂)_m-, -O(CY₂)_m-, -(CY₂)_mO-, -(CY₂)_mCOO-, -(CY₂)_mOOC-, -(Si[(CH₃)₂]O)_m-, -OCH₂(Si[(CH₃)₂]O)_mSi[(CH₃)₂]CH₂O- -NHCH₂(Si[(CH₃)₂]O)_mSi[(CH₃)₂]CH₂NH-(, Y , m 1 16) ;
 n 0, 1 2 ,

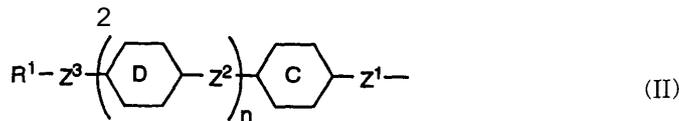
R¹ CH₂=CH-, CH₂=CH-COO-, CH₂=C(CH₃)-COO-, CH₂=C(Cl)-COO-, CH₂=C(Ph)-COO-, CH₂=CH-COO-Ph-, CH₂=CH-CO-NH-, CH₂=C(CH₃)-CONH-, CH₂=C(Cl)-CONH-, CH₂=C(Ph)-CONH-, CH₂=C(COOR')-CH₂-COO-, CH₂=CH-O-, CH₂=CH-OOC-, Ph-CH=CH-, CH₃-C(=NR')-, ,



R¹ -Z³ -O-O- -N-O-

3.

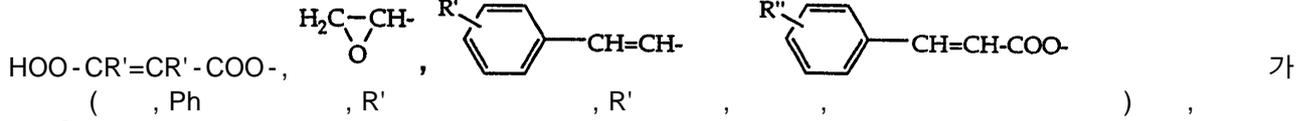
1 , A¹ A² 가 (II) :



C D , -2,5- , -2,5- , -1,4- , -1,3-
 -2,5- , / 1,4- ;

Z¹ -CH₂-, -CO-, -(CH₂)₃- (CH₂)₂CO- ;
 Z² , -CH₂CH₂-, -CH₂O-, -OCH₂-, -COO-, -OOC-, -(CH₂)₄-, -O(CH₂)₃- (CH₂)₃O- ;
 Z³ -(CY₂)_m-, -O(CY₂)_m-, -(CY₂)_mO-, -(CY₂)_mCOO-, -(CY₂)_mOOC-, -(Si[(CH₃)₂]O)_m-, =OCH₂(Si[(CH₃)₂]O)_mSi[(CH₃)₂]CH₂O- -NHCH₂(Si[(CH₃)₂]O)_mSi[(CH₃)₂]CH₂NH-(, Y , m 1 16) ,
 n 0 1 ;

R¹ CH₂=CH-, CH₂=CH-COO-, CH₂=C(CH₃)-COO-, CH₂=C(Cl)-COO-, CH₂=C(Ph)-COO-, CH₂=CH-COO-Ph-, CH₂=CH-CO-NH-, CH₂=C(CH₃)-CONH-, CH₂=C(Cl)-CONH-, CH₂=C(Ph)-CONH-, CH₂=C(COOR')-CH₂-COO-, CH₂=CH-O-, CH₂=CH-OOC-, Ph-CH=CH-, CH₃-C(=NR')-, ,



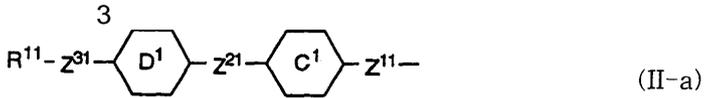
R¹ -Z³ -O-O- -N-O-

4.

2 3 , A¹ A² 가 .

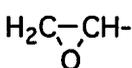
5.

1 3 , (II-a) :



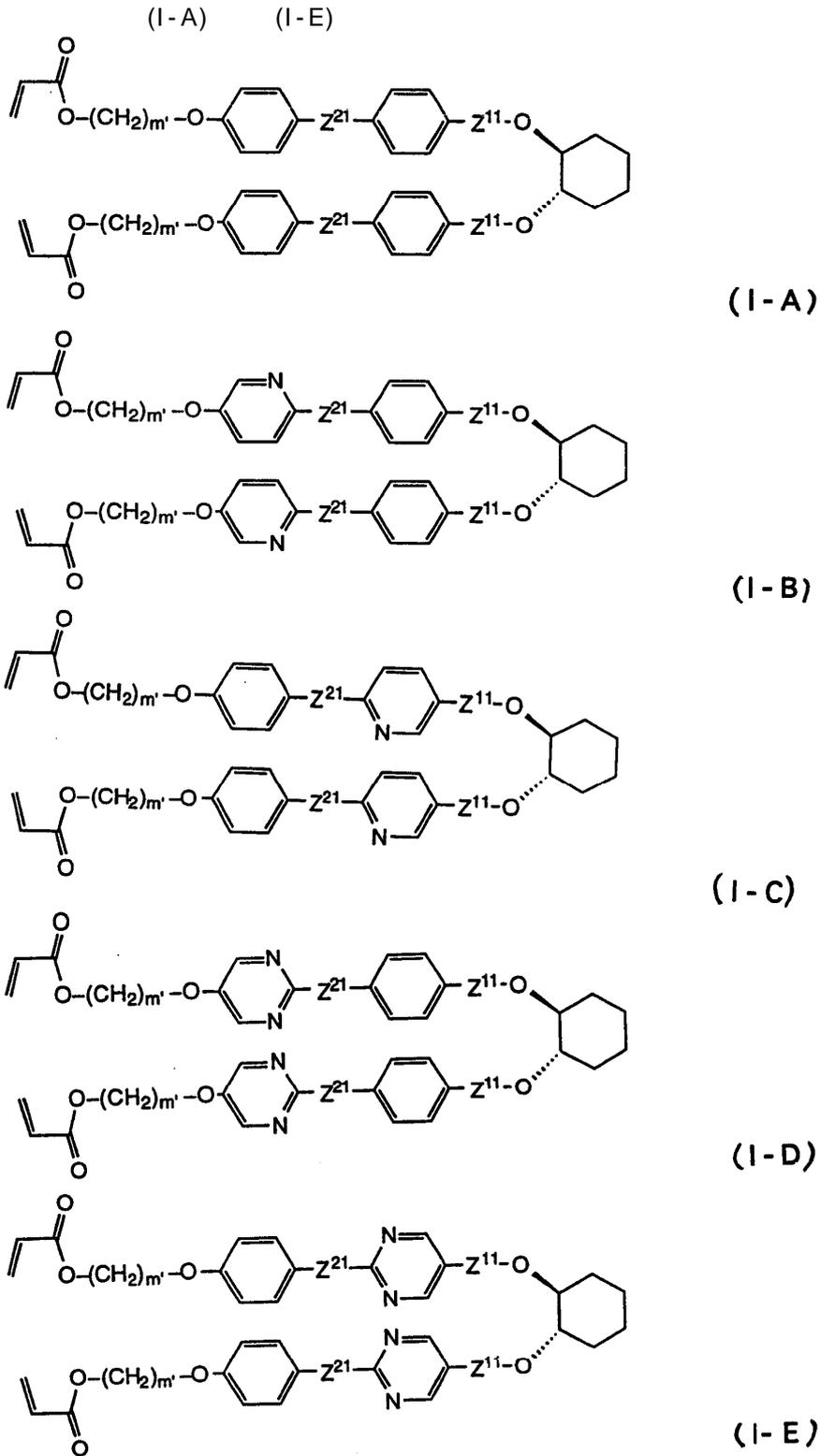
C¹ D¹ , -2,5- , -2,5- , -1,4- , 1,4- ;

Z¹¹ -CH₂- -CO- ;
 Z²¹ , -CH₂O-, -COO- -OOC- ;
 Z³¹ -(CH₂)_{m'}-, -(CH₂)_{m'}O-, -(CH₂)_{m'}COO- -(CH₂)_{m'}OOC-(, m' 3 12) ;

R¹¹ CH₂=CH-COO-, CH₂=C(CH₃)-COO-, CH₂=CH-O-  .

6.

5 ,



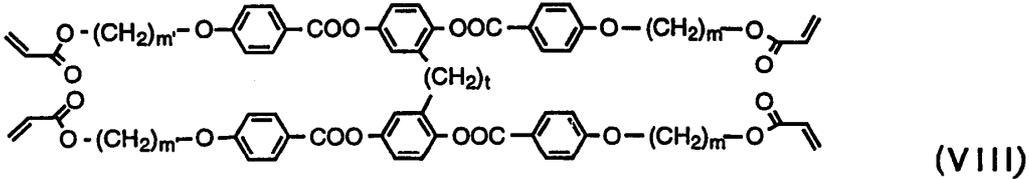
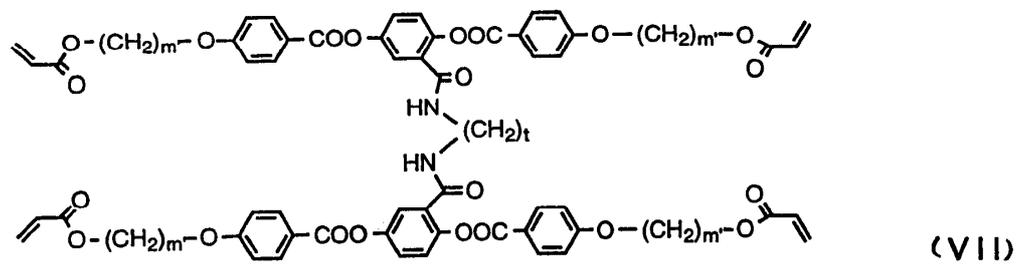
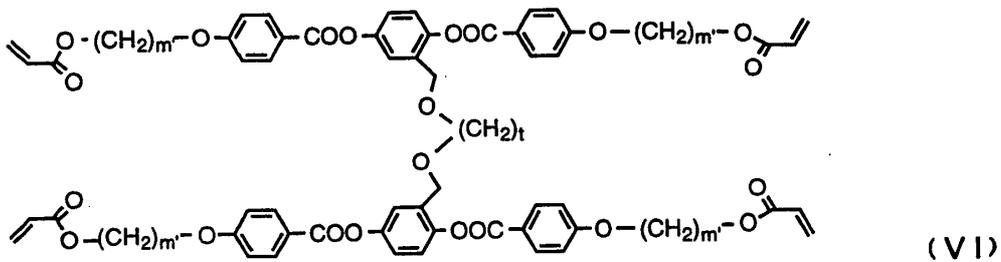
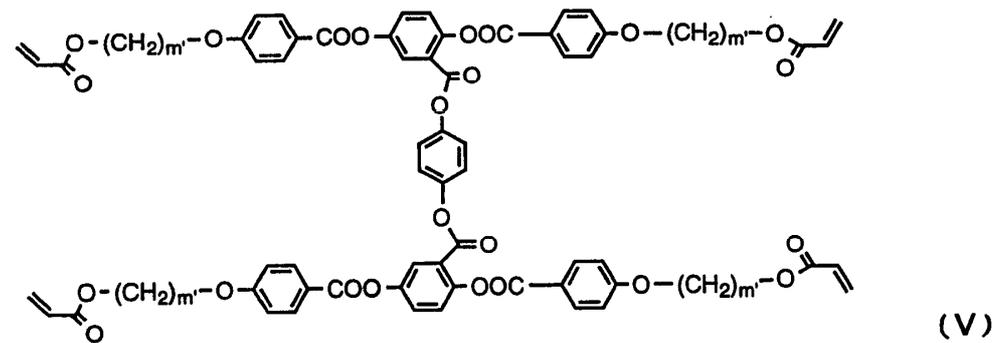
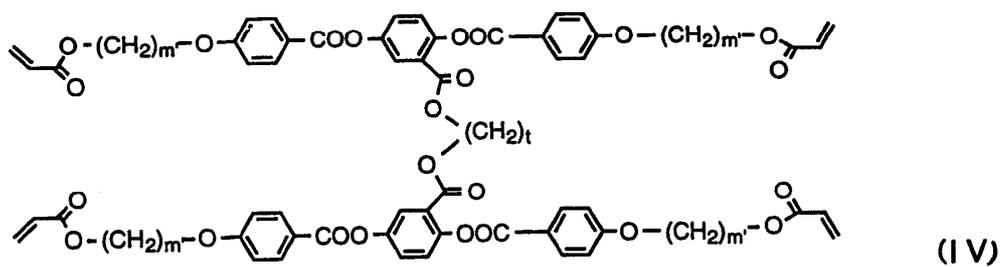
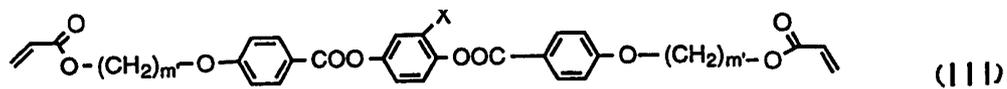
Z^{11} -CO- ;
 Z^{21} -COO-, -COO- ;
 m' 3 12

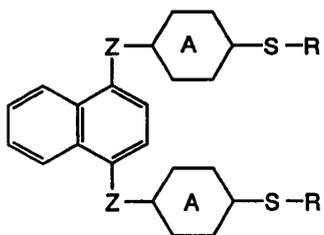
7.

1 가 (I)

8.

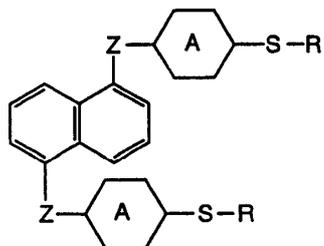
7 가 (I) (III) (X)





(IX)

및



(X)

X , , ;
 m' 4 , 12 ;
 t 2 , 12 ; Z $-OCH_2-$, $-OOC-$;
A 1,4- , 2- , 3- , -1,4- ;
S $-(CH_2)_{m'}$, $-(CH_2)_{m'}O-$, $-O(CH_2)_{m'}$;

R $CH_2=CH-COO-$, $CH_2=C(CH_3)-COO-$, $CH_2=CH-O-$
9.

1 3 가

10.

7 8 가 가

